

TRACE ANALYTICAL LABORATORIES, INC.

QA/QC issue discussions will be documented on the Bi-weekly Quality Control Management Review form. Action items and the person(s) responsible for the action will be defined. Action items will be tracked in subsequent meetings, and closure will be documented.

In addition to the bi-weekly management meetings, a meeting of all employees is held weekly. This serves as an opportunity to discuss workload and any issues that arise on a weekly basis.

Appendix I

Resumes of Key Personnel

TRACE ANALYTICAL LABORATORIES, INC.

R. BRUCE PELLETIER, President

The Company President is responsible for the overall operation, planning, organizing, and directing of the laboratory and management staff. Key areas of responsibility are corporate image, client relations, company leadership, employee relations, quality assurance, and financial management.

RESPONSIBILITIES

- Assists with budget development, cash flow management, tax planning, financial strategies and organization of overall financial functions.
- Sets corporate goals and makes recommendations for plans to achieve these goals.
- Works with staff to develop and maintain a strong professional image for the company with respect to its clients, competitors, employees, and the community.
- Provides technical information and advice to clients regarding their projects or proposed projects.
- Oversees and assists with repairs, maintenance and installation of instrumentation. Also oversees facility maintenance.
- Coordinates changes within the laboratory to comply with changing regulatory requirements.
- Assists laboratory staff in writing, reviewing, and implementing SOP's.
- Serves as project coordinator for special or unusual analytical projects that differ from those commonly conducted by the laboratory.
- Reviews proposed projects containing requests for air analyses to determine if the work is within the capabilities of the laboratory.
- Supervises method development and method validation procedures for air quality analyses.
- Trains and qualifies chemists and technicians to analyze air samples in a manner consistent with good quality control practices and procedures.

PROFESSIONAL EXPERIENCE

January 1990 - Present: TRACE Analytical Laboratories, Inc., Muskegon, MI
President and Co-Owner

Air Quality Supervisor, and Special Projects Coordinator.

January 1984 - December 1990: Koch Chemical Company, Inc., Whitehall, MI
Senior Analytical Chemist and Quality Control Director

Supervised a staff of one chemist and three technicians. Responsible for the day to day operations of the FDA approved Product Testing Laboratory. Primary responsibilities included the analyses of incoming raw materials to validate stated purity, analyses of pharmaceutical intermediates to determine reaction completeness, and final product testing to formulate Certificates of Analysis for the final finished products. Additional responsibilities included instrument repair and maintenance, writing and implementation of SOP's. Instrumentation used and maintained for this position included gas chromatographs, high pressure liquid chromatographs, infrared spectrophotometers, visible and UV wavelength scanning spectrophotometers, automatic titrators, refractometers, melting point apparatus, fractional distillation equipment, and precision analytical balances.

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May 1977 - December 1983: Aquatic Systems, Inc., Ludington, MI Laboratory Director

Responsible for the daily operation of the environmental laboratory. Responsibilities included scheduling, instrument repair and maintenance; writing and implementation of SOP's, project management, data review, and the training of laboratory staff. This was a working position that also required the analysis of client samples for wet chemistry, metal, volatile and semi-volatile organic parameters. Instrumentation used and maintained under this position included gas chromatographs, high pressure liquid chromatographs, atomic absorption spectrophotometers, visible and UV wavelength spectrophotometers, infrared spectrophotometers, and precision analytical balances.

September 1975 - May 1977: Central Michigan University, Mt. Pleasant, MI, University Instructor for the Biology Department

Responsible for teaching General Biology and Determinative Bacteriology classes under a graduate teaching assistantship. This position required the formulation and presentation of course lectures and laboratory sections. An additional requirement was the advanced preparation of bacteriological culture media and glassware.

October 1975 - May 1977: Three Lakes Association, Inc., Antrim County, MI, Water Quality Specialist

Responsible to formulate and implement a comprehensive water sampling and analysis program to determine and document the water quality of Torch, Clam, and Bellaire Lakes of Antrim County. Tests conducted on these lakes included bottom dredging and identification of invertebrates, bottom coring for lake aging and sediment profiling, transparency measurements, total phosphorus, ammonia nitrogen, nitrate nitrogen, total organics, and chlorophyll analyses. Additional responsibilities included maintaining all sampling and analytical equipment and to provide written annual reports of all findings to the lake association.

EDUCATION

- **B.S., Aquatic Biology**, Michigan State University,
Minor in Chemistry
- **M.S., Limnological Studies**, Central Michigan University,

PROFESSIONAL ORGANIZATIONS/CERTIFICATIONS

- American Chemical Society
- Society of American Military Engineers
- Handling Hazardous Materials & Hazardous Materials Operations
- Hazardous Materials-First Responder Operations

TRACE ANALYTICAL LABORATORIES, INC.

WILLIAM SCHROEDER, Ph.D., Senior Vice President

The Senior Vice President is responsible for the overall management of the company in conjunction with the President. Ultimate decisions about financial and personnel matters are a primary function. In addition, the Senior Vice President is available to the staff as a technical advisor and chemical consultant. Finally, the Senior Vice President serves as the company representative in community activities and contacts with corporate, political, and environmental entities.

PROFESSIONAL EXPERIENCE

**September 1989 – Present: TRACE Analytical Laboratories, Inc., Muskegon, MI,
Co-Owner and Senior Vice President.**

**1985 - 1989: Baxter International, Muskegon, MI,
Vice President and General Manager of the Burdick and Jackson Division**

This position had complete profit and loss responsibilities for a manufacturing operation engaged in the production of highly purified solvents designed for use in sophisticated analytical techniques. Additional responsibilities included the coordination of activities with other corporate interests.

**1983 - 1985: American Hospital Supply Corporation, Muskegon, MI,
Vice President and General Manager of the Burdick and Jackson Division**

This position had complete profit and loss responsibility for a manufacturing operation engaged in the production of highly purified reagents and the coordination of division sales efforts with corporate national programs.

**1978 - 1983: Hofmann LaRoche International, Muskegon, MI,
President of the Burdick and Jackson Division**

This position had full profit and loss responsibilities for a manufacturing and research operation designed to broaden the manufacturing interest of the parent company; specifically to develop procedures for the manufacture of chemical intermediates as well as the continuing operation of the purified solvent program.

**1974 - 1978: Hofmann LaRoche International, Muskegon, MI,
V.P. Research for the Burdick and Jackson Division**

This position was responsible for the development of new procedures for the purification of solvents and the innovative synthesis of organic intermediates for the preparation of new pharmaceuticals.

**1965 - 1974: Burdick and Jackson Laboratories, Muskegon, MI,
Vice President of Research and Co-Owner**

Responsible for the development of procedures for the preparation of highly purified solvents and the production of intermediates and final drug products for the pharmaceutical industry. These drug products required the inspection of the operation and approval of procedures by the Food and Drug Administration. The development of analytical procedures for testing the purity of both the solvent and drug products was also a requirement.

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1958 - 1965: The Upjohn Company, Kalamazoo, MI, Research Associate

This position was responsible for the research and development of new antibiotics and anti-cancer drugs. A significant result of this activity was the cooperative effort that brought to market the antibiotic Lincocin and its derivatives. This antibiotic has unique properties for the control of deep-seated bone infections.

EDUCATION

- **Ph.D., Organic Chemistry**, Purdue University
- **B.S., Chemistry**, Purdue University

PROFESSIONAL ORGANIZATIONS/CERTIFICATIONS

- American Chemical Society
- Association of Official Analytical Chemists
- Research Associate: Grand Valley State University

TRACE ANALYTICAL LABORATORIES, INC.

GINA ROE, Laboratory Manager

The Laboratory Manager is responsible for all aspects of environmental chemistry as related to clients and projects. The Laboratory Manager is also responsible for the day to day operations of the laboratory.

RESPONSIBILITIES

- **Production** - Responsible for the overall production of the laboratory, including development of new methods, and scheduling of workloads
- **Performance** - Insures that the laboratory is meeting requirements regarding quality, procedures, volume, and turnaround. Schedules and reviews analyst certifications, MDL studies and SOP writing. Monitors on-time performance. Conducts annual review of employees.
- **Data Validation** - Accountable for the data released from the laboratory. Reviews analytical data prior to submission to data reporting, evaluates PE results, and implements corrective actions.
- **Budget** - Responsible for the development and maintenance of an operating budget.
- **Training** - Insures that employees are properly trained to meet the requirements of their positions.
- **Client Interface** - Serves as the in-house representative on all projects requiring technical expertise.
- **Planning** - Plans for future growth of the laboratory.

PROFESSIONAL EXPERIENCE

July 2010-Present: Trace Analytical Laboratories, Inc., Muskegon, MI, Laboratory Manager

October 2005 – July 2010: Trace Analytical Laboratories, Inc., Muskegon, MI, Project Manager

February 1997 – October 2005: Trace Analytical Laboratories, Inc., Muskegon, MI, Senior Analyst

Responsible for GC/MS volatiles and other organic analyses.

February 1990 – February 1997: Trace Analytical Laboratories, Inc., Muskegon, MI, Analyst

Responsible for Organic, Inorganic, and Metals analysis.

September 1986 – May 1987: Muskegon Community College. Interim Laboratory Director

Responsible for laboratory set-up for student use, and ordering of supplies.

EDUCATION

- **A.A.S., Chemistry, Muskegon Community College**
- **B.S., Natural Resource Management, Grand Valley State University**

TRACE ANALYTICAL LABORATORIES, INC.

JON MINK, Technical Systems/Project Manager

The Technical Systems/Project Manager is responsible for mobile analytical services, sampling services, equipment repair and maintenance, waste management and disposal, LIMS/computer systems management and special project management.

RESPONSIBILITIES

- Evaluate the ability of the laboratory to perform new methods with existing equipment and personnel.
- Determine project requirements with clients, as pertaining to instrumental and staff capabilities. As necessary develop and implement new analytical methodologies as required by client project needs.
- Set up and oversee laboratory equipment maintenance and preventative maintenance schedules.
- Conduct major repairs of analytical equipment with help from the manufacturers technical support staff. If necessary schedule on-site or off-site repair.
- Develop, implement, and oversee a plan for the management and disposal of laboratory and sample waste.
- Work with clients to determine sampling requirements.
- Manage LIMS/Computer systems.
- Building maintenance.

PROFESSIONAL EXPERIENCE

**September 1995 – Present: TRACE Analytical Laboratories, Inc., Muskegon, MI,
Technical Systems Manager/Project Manager**

**July 1993 – September 1995: TRACE Analytical Laboratories, Inc., Muskegon, MI,
Project Manager**

The Project Manager was responsible for the management of the mobile analytical services. Duties also included special project management. Included were the selection, set-up, and maintenance of instrumentation.

**July 1992 - July 1993: TRACE Analytical Laboratories, Inc., Muskegon, MI,
Application Specialist**

Responsible for determining the laboratories abilities to meet specific, non-standard, client analytical requests. Also responsible for the implementation of new EPA analytical methods not currently being performed by the laboratory.

**July 1991 - July 1992: TRACE Analytical Laboratories, Inc., Muskegon, MI,
Client Services / Safety Manager**

Corresponded with clients regarding analytical requirements. Included in this was the determination of proper sample techniques, volumes, containers, preservatives, and hold times. Also worked closely with the laboratory to determine the availability of analytical results and priority sample treatment. Other duties included ordering of supplies needed by the laboratory for day to day operations, and the development of the laboratory safety plan.

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September 1990 - July 1991: TRACE Analytical Laboratories, Inc., Muskegon, MI, Analyst

Performed analyses in all areas of the laboratory. Set-up new equipment for analytical determinations, investigated and implemented new methodologies. Also responsible for field sampling.

January 1984 - September 1988: University of California at San Diego, School of Medicine Pathology Department. La Jolla, California, Lab Assistant II

Worked with a principal investigator doing research on cholestasis and choleuresis as an electron microscopist and research assistant. Duties included small animal surgeries, tissue harvesting, tissue processing for light microscopy and transmission electron microscopy, electron micrograph development and printing, student assistant supervision, paper writing for journal publication, and laboratory purchasing.

EDUCATION

- **B.A., Microbiology**, University of California, San Diego, Revelle campus
minors in Physiological Psychology and Chemistry

PROFESSIONAL ORGANIZATIONS/CERTIFICATIONS

- Hazardous Materials Specialist
- Firefighter I & II
- Confined Space Rescue Technician
- Member Muskegon County Hazmat Team
- Member Michigan Regional Response Team for Western Michigan District

TRACE ANALYTICAL LABORATORIES, INC.

ALYSON YAGIELA, QA/QC Manager

The QA/QC Manager will make sure that all aspects of the program comply with current and appropriate regulatory requirements, methodologies, and protocols, will coordinate and manage the quality assurance program on a daily basis, and shall keep members of the quality assurance group informed on issues relating to the laboratory quality assurance program.

RESPONSIBILITIES

- Conducts internal and coordinates external laboratory audits.
- Coordinates efforts for state and federal certifications.
- Coordinates changes within the laboratory to comply with changing regulatory requirements.
- Assists laboratory staff in writing, reviewing, and implementing SOP's.
- Maintains Quality Control calculation programs.
- Updates and edits Quality Control Program manual.
- Assists with project quotation preview and review.

PROFESSIONAL EXPERIENCE

May 2011 – Present: TRACE Analytical Laboratories, Inc., Muskegon, MI
QA/QC Manager

February 2007 – May 2011: Mead Johnson Nutrition, Zeeland, MI
Quality Control Laboratory Analyst

Held multiple roles within the QA/QC labs, including the collection, preparation, and analysis of infant formula samples. Worked to update SOPs and analytical methods, which required strict adherence to FDA regulations.

September 2005 – February 2007: Aerotek Scientific, Mead Johnson Nutrition, Zeeland, MI

Quality Assurance Technician

Laboratory sample preparation and analysis using microbial determination methods while complying with FDA regulations.

May 2002 – May 2004: Michigan State University, East Lansing, MI
Master's Degree Candidate / Research Assistantship

Master's thesis research studied the effects of nutrient enrichment on consumers in lacustrine wetlands using stable isotopes. Assisted with Muskegon River Watershed Assessment Project sampling and algal identification.

May 2001 – August 2001: Boston University, Woods Hole, MA
REU – Research Fellow

Worked on a sandplain restoration project and designed/implemented research project to study nitrogen concentrations at the seepage face of Edgartown Great Pond.

September 2000 – April 2001: University of Michigan, Ann Arbor, MI
Assistant-in-Research

Studied historical trends in diatom assemblages and effects on the diets of fish and zooplankton.

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May 2000 – August 2000: National Oceanic and Atmospheric Administration, Muskegon, MI

Research Fellow

Studied zooplankton size and population distributions in Lake Michigan.

EDUCATION

- **B.S., Resource Ecology & Management**, The University of Michigan
- **M.S., Zoology**, Michigan State University

TRACE ANALYTICAL LABORATORIES, INC.

Appendix II**Sample Containers and Preservatives**

SAMPLE REQUIREMENTS - WATER SAMPLES				
Test Parameter	Method	Container	Preservative	Hold Time
Acidity	305.1	250 mL Plastic	Cool to <6°C	14 days
Alkalinity	SM 2320B	250 mL Plastic	Cool to <6°C	14 days
Ammonia-Nitrogen	350.1	250 mL Plastic	H ₂ SO ₄ , Cool to <6°C	28 days
BOD	SM 5210B	1 Liter Plastic	Cool to <6°C	48 Hours
COD	410.1	250 mL Plastic	H ₂ SO ₄ , Cool to <6°C	28 days
Cyanide	335.4	125 mL Plastic	NaOH, Cool to <6°C	14 days
Chloride	300	125 mL Plastic	Cool to <6°C	28 days
Chlorine	SM 4500 Cl G	500 mL Plastic	Cool to <6°C	Immediate
Fluoride	300	250 mL Plastic	Cool to <6°C	28 days
Hardness	130.2	250 mL Plastic	HNO ₃ , Cool to <6°C	6 months
Herbicides	8151	(2) 1 Liter Ambers	Cool to <6°C	14 days/40 days
Hexavalent Chromium	SM 3500 Cr B	250 mL Plastic	Cool to <6°C	Immediate
Mercury	245.1	250 mL Plastic	HNO ₃ , Cool to <6°C	28 days
Low Level Mercury	1631	Call Trace	BrCl or HCl, Cool to <6°C	90 days
Metals	200/60x0/7000	500 mL Plastic	HNO ₃ , Cool to <6°C	6 months
Nitrate	300	250 mL Plastic	Cool to <6°C	48 Hours
Nitrate-Nitrite	300	250 mL Plastic	H ₂ SO ₄ , Cool to <6°C	28 days
Nitrite	300	250 mL Plastic	Cool to <6°C	48 Hours
Nitrogen, Total Kjeldahl	351.2	250 mL Plastic	H ₂ SO ₄ , Cool to <6°C	28 days
Oil & Grease	1664	1 Liter Amber	HCl, Cool to <6°C	28 days
Oxygen, Dissolved	SM 4500 O C	Call Trace	Call Trace	8 hours
PCBs	8081	(2) 1 Liter Ambers	Cool to <6°C	1 year/1 year
Pesticides	8081	(2) 1 Liter Ambers	Cool to <6°C	7 days/40 days
pH	SM 4500 H+ B	125 mL Plastic	Cool to <6°C	24 hours
Phenols (Total)	420.1	2 oz Amber	H ₂ SO ₄ , Cool to <6°C	28 days
Phosphorus, Ortho	365.1	125 mL Plastic	Filter, Cool to <6°C	48 Hours
Phosphorus, Total	365.1	250 mL Plastic	H ₂ SO ₄ , Cool to <6°C	28 days
PNAs	8270	(2) 1 Liter Ambers	Cool to <6°C	7 days/40 days
Semivolatile Organics (BNA)	8270	(2) 1 Liter Ambers	Cool to <6°C	7 days/40 days
Solids	SM 2540 B	250 mL Plastic	Cool to <6°C	7 days
Solids, Settleable	160.5	1 Liter Plastic	Cool to <6°C	48 Hours
Sulfate	300	250 mL Plastic	Cool to <6°C	28 days
Sulfide	SM 4500 S2 F	Call Trace	Call Trace	7 days
Sulfite	SM 4500 SO3B	BOD bottle	EDTA	Immediate
Surfactants (MBAS)	SM 5540 C	500 mL Plastic	Cool to <6°C	48 Hours
Total Organic Carbon	SM 5310 D	250 mL Plastic	H ₂ SO ₄ , Cool to <6°C	28 days
TPH	418.1	1 Liter Amber	H ₂ SO ₄ , Cool to <6°C	14 days

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SAMPLE REQUIREMENTS - WATER SAMPLES (continued)

Test Parameter	Method	Container	Preservative	Hold Time
TOX/AOX	9020	250 mL Amber	H ₂ SO ₄	28 days
Volatile Organics	8021/8260	(3) 40 mL VOAs	HCl, Cool to <6°C	14 days
Water Content	Karl Fischer	125 mL Plastic	Cool to <6°C	7 days

SAMPLE REQUIREMENTS - SOLID SAMPLES

Test Parameter	Method	Container	Preservative	Hold Time
Cyanide	335.2	4 ounce glass jar	Cool to 4°C	14 days
Flash Point	1010	4 ounce glass jar	Cool to 4°C	ASAP
Herbicides	8150	4 ounce glass jar	Cool to 4°C	14 days/40 days
Hexavalent Chromium	7196	4 ounce glass jar	Cool to 4°C	24 hrs after leach
Mercury	7471	4 ounce glass jar	Cool to 4°C	28 days
Metals	6010/7000	4 ounce glass jar	Cool to 4°C	6 months
Oil & Grease	413.1	4 ounce glass jar	Cool to 4°C	28 days
Paint Filter	9095	4 ounce glass jar	Cool to 4°C	7 days
PCBs	8081	4 ounce glass jar	Cool to 4°C	14 days/40 days
Pesticides	8081	4 ounce glass jar	Cool to 4°C	14 days/40 days
pH	9045	4 ounce glass jar	Cool to 4°C	24 hours
Phosphorus, Total	365.2	4 ounce glass jar	Cool to 4°C	28 days
PNAs	8270	4 ounce glass jar	Cool to 4°C	14 days/40 days
Reactivity	SW 846, Ch. 7	4 ounce glass jar	Cool to 4°C	7 days
Semivolatile Organics (BNA)	8270	4 ounce glass jar	Cool to 4°C	14 days/40 days
Sulfate	375.4	4 ounce glass jar	Cool to 4°C	28 days
TCLP/SPLP	1311/1312	(5) 4 ounce glass jars	Cool to 4°C	14 days
Total Organic Carbon	415.1	4 ounce glass jar	Cool to 4°C	28 days
TPH	418.1	4 ounce glass jar	Cool to 4°C	14 days
Volatile Organics	8021/8260	Methanol/Encor™	Cool to 4°C	48 Hrs/14 days

Appendix III

Method and Reference Sources

Standard Methods For the Examination of Water and Wastewater, A.D. Eaton, et. al, editors, American Water Works Assoc., On-Line.

Methods for Chemical Analysis of Water and Wastes, J.F. Kopp and G.D. McKerr, USEPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, EPA-600/4-79-020, revised March 1983.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Office of Solid Waste and Emergency Response, On-Line.

Official Methods of Analysis, 15th Edition, Kenneth Helrich, ed., Association of Official Analytical Chemists, Arlington, VA, 1990, 1990. (or earlier editions).

Annual Book of ASTM Standards, American Society for Testing and Materials, Philadelphia, PA, published annually.

NIOSH Manual of Analytical Methods, Second and Third Editions, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institutes for Occupational Safety and Health, Division of Physical Sciences and Engineering, Cincinnati, OH, 1981, 1984, and updates.

Methods of Soil Analysis, Second Edition, Arnold Klute, Editor, American Society of Agronomy, Inc., Soil Society of America, Inc., Madison, WI, 1986.

Title 40 Code of Federal Regulations part 136, app. a and b, Most Current Edition, Office of the Federal Register National Archives and Records Administration, Washington D.C.

Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH, August 1993.

Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/010, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH, June 1991.

Methods for the Determination of Metals in Environmental Samples Supplement, EPA/600/R-94-111, PB95-125472, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH, May 1994.

Methods for the Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH, December 1988 (Revised July 1991).

Plumb, R. H., Jr. 1981. Procedures for Handling and Chemical Analysis of Sediment and Water Samples, Technical Report EPA/CE-81-1

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Laboratory Operations and Quality Assurance Manual, United States Environmental Protection Agency, Region 4, 900 College Station Road Atlanta, Georgia
Drinking Water Standard Operating Procedures

Drinking Water Methods and Standard Operating Procedures

Analyte	Analytical Method	TAL SOP #	SOP Title
Total and <i>E. Coli</i>	SM 9223B	100-42	The Determination of Total Coliform and <i>E. Coli</i> by Presence-Absence
Heterotrophic Plate Count	SM 9215B	100-47	Heterotrophic Plate Count
Barium, Beryllium, Chromium, Copper, Nickel, and Sodium	EPA 200.7	110-2	Analysis of Metals by Inductively Coupled Plasma Atomic Emission Spectroscopy: Method 200.7
Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, and Thallium	EPA 200.8	110-11	Analysis of Metals by Inductively Coupled Plasma Mass Spectroscopy: Method 200.8
Mercury	EPA 245.1	110-7	Determination of Mercury in Water by Cold Vapor Atomic Absorption Spectrometry: Method 245.1
Cyanide	EPA 335.4	100-1	The Determination of Total and Amenable Cyanide by Semi-Automated Colorimetry
Nitrite	SM 4500-NO ₂ -B	100-8	The Determination of Nitrite-Nitrogen by Spectrophotometric Analysis
Fluoride, Nitrate, Nitrite, and Sulfate	EPA 300.0	100-19	The Determination of Inorganic Anions by Ion Chromatography

Appendix IV

Major Equipment List

Wet Chemistry Department

- Lachat QuikChem[®] 8500 Instrument with XYZ Sampler (S/N: 101200001292)
- Konelab Aqua 20 (S/N: S2519233)
- Mettler DL-21 auto-titrator with probes for Alkalinity and Chloride analyses (S/N: M06782)
- Kontes Midi Cyanide Distillation Unit
- Dionex DX500 Ion Chromatograph system (S/N: 97030284)
- Dionex ICS-1500 Ion Chromatograph system (S/N: 06120697)
- Perkin Elmer 1650 FT-IR Fourier transformed infra-red spectrophotometer
- Milton Roy Spectronic 21 spectrophotometer (S/N: 3151186012)
- Spectronic Instruments Spectronic Genesys 5 spectrophotometer (S/N: 3V89193004)
- Tekmar Dohrmann Pheonix 8000 TOC Analyzer (S/N: US01170011)
- O.I. Model FS 3000 Available Cyanide Instrument with a Model 5027 sampler (S/N: 351804496)
- Orion Model 830A dissolved oxygen meter
- YSI Model 500 dissolved oxygen meter (S/N: 04B0563)
- Orion Model 122 conductivity meter (S/N: 33294058)
- Euroglass 1200 AOX Analyzer (S/N: 2001.079)
- Pensky-Martens TS-74745 AP-9 flash point tester
- Petrotest Auto Flashpoint Tester (S/N: 0741032203)
- O.I. Analytical CNSolution 3100 Cyanide Analyzer (S/N: 302831499)
- Meile Professional Laboratory Dishwasher G7883 CD

Aquacounter AQV-300 Volumetric Karl Fischer Titrator (S/N: P421008-7)

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Metals Department

- Perkin-Elmer NexION 300X Inductively Coupled Plasma Mass Spectrometer (S/N: 81XN3081201)
- Jobin-Yvon Ultima 2 Inductively Coupled Plasma Atomic Absorption Spectrophotometer with AS421 Autosampler (S/N: 12015684NE)
- Varian 720-ES ICP-OES with Varian SPS 3 Autosampler (S/N: EL06033903)
- CETAC M-6100 Mercury Analyzer with ASX-130 autosampler (S/N: 010901QTA)
- CETAC M-800 Low Level Mercury Analyzer, Atomic Fluorescence Spectrometer (S/N: 061302QMB)
- MARSX Digestion Microwave (S/N: XM3209)
- Hanna Instruments HI 93703 Turbidity Meter (S/N: 453093)

Organics Department

Extractions

- CEM Corporation MARSX Extraction Microwave with 40-position turntable (S/N: MD3921)
- Horizon Technology SPE-1000XL Plus SS Hexane Extractable Materials Analyzer (S/N: 00-007)

GC/MS Volatiles

- Hewlett-Packard 5890 Series II Gas Chromatograph with Electronic Pressure Control and a 5971A Mass Selective Detector coupled with a Tekmar LSC-2000 Purge and Trap Concentrator and an Archon Water / Soil Autosampler. Instrument S/N: 3609A00855. Instrument Name: TRIXIE.
- Hewlett-Packard 5890 Series II Gas Chromatograph with Electronic Pressure Control and a 5972A Mass Selective Detector coupled with a Tekmar LSC-2000 Purge and Trap Concentrator and an Archon (EST Model 8100) water and soil autosampling system. Instrument S/N: 3307A00304. Instrument Name: CASSIE.
- Hewlett-Packard 5890 Series II Gas Chromatograph with 5972 Mass Selective Detector coupled with a Tekmar LSC-2000 Purge and Trap Concentrator and a CENTURION water and soil autosampling system. MS Instrument S/N: 3341A00932. Instrument Name: JACOB.
- Hewlett-Packard GCD Series Gas Chromatograph with Electronic Pressure Control and an EID coupled with a Tekmar LSC-2000 Purge and Trap Concentrator and a CENTURION water and soil autosampling system. Instrument S/N: LR 47359C. Instrument Name: OTIS.

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GC Volatiles

- Varian 3300 Gas Chromatograph with O.I. 430 Photo Ionization Detector coupled with a Tekmar LSC-2000 Purge and Trap Concentrator equipped with a Dynatech PTA-30 W/S water and soil autosampling system. Instrument S/N: 4026. Instrument Name: MYRTLE.
- Varian 3400 Gas Chromatograph with dual Varian Flame Ionization Detectors. Instrument S/N: 2066. Instrument Name: HOMER.
- Varian 3400 Gas Chromatograph with Varian Flame Ionization Detectors (S/N: 3520)

GC/MS SemiVolatiles

- Hewlett-Packard 5890 Series II Gas Chromatograph with Electronic Pressure Control equipped with 5971 Mass Selective Detector and 7673A Automatic Injector. Instrument Name: BETA.
- Hewlett-Packard-GCD Series II Gas Chromatograph with Electronic Pressure Control equipped with 5972 Mass Selective Detector and 7673 Automatic Injector. Instrument S/N: US00063331. Instrument Name: STUD.
- Hewlett-Packard Series II Gas Chromatograph with Electronic Pressure Control equipped with 6890 Mass Selective Detector and 6890 Series Injector. Instrument Name: HAWG.
- Hewlett-Packard 5890 Series II Gas Chromatograph with 5971A Mass Selective Detector and an HP 7673 Controller and Injector. MS S/N: 3188A03554 GC S/N: 3310A47628. Instrument Name: EDWARD

GC SemiVolatiles

- Hewlett-Packard 5890A Gas Chromatograph with dual Split/Splitless injectors and dual Flame Ionization Detectors equipped with a 7673A Automatic Injector. Instrument S/N: 2843A19951. Instrument Name: FRANK.
- Hewlett-Packard 5890A Gas Chromatograph with dual Split/Splitless injectors, an Electron Capture Detector and a 7673A Automatic Injector. Instrument S/N: 2443A04016. Instrument Name: NORTON.
- Hewlett-Packard 5890A Gas Chromatograph with a Universal Injector and a Flame Ionization Detector and an Electron Capture Detector equipped with a 7673A Automatic Injector. Instrument S/N: 87082702. Instrument Name: BACCHUS.
- Varian 3400 Gas Chromatograph with Electron Capture Detector and a Universal Injector equipped with a 8200 autosampler. Instrument S/N: 6552. Instrument Name: DOLLY.
- Varian 3400 Gas Chromatograph with Electron Capture Detector and a Split/Splitless Injector equipped with an 8100 autosampler. Instrument S/N: 8119. Instrument Name: STOSH.

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- Varian 3400 Gas Chromatograph with Flame Ionization Detector. Instrument S/N: 15921. Instrument Name: GUS.
- Agilent HPLC 1050 with Diode Array Detector. Instrument S/N: 2840A00296. Instrument Name: ODIN.
- Waters HPLC with Supelco UV/VIS Detector. Instrument S/N: 590-003253. Instrument Name: THOR.
- Agilent 6890 Gas Chromatograph (S/N: US00026897) with Electron Capture Detector (S/N: U2188) equipped with a 7683 autosampler injector and tray. Instrument Name: FREYA.

Mobile Laboratory

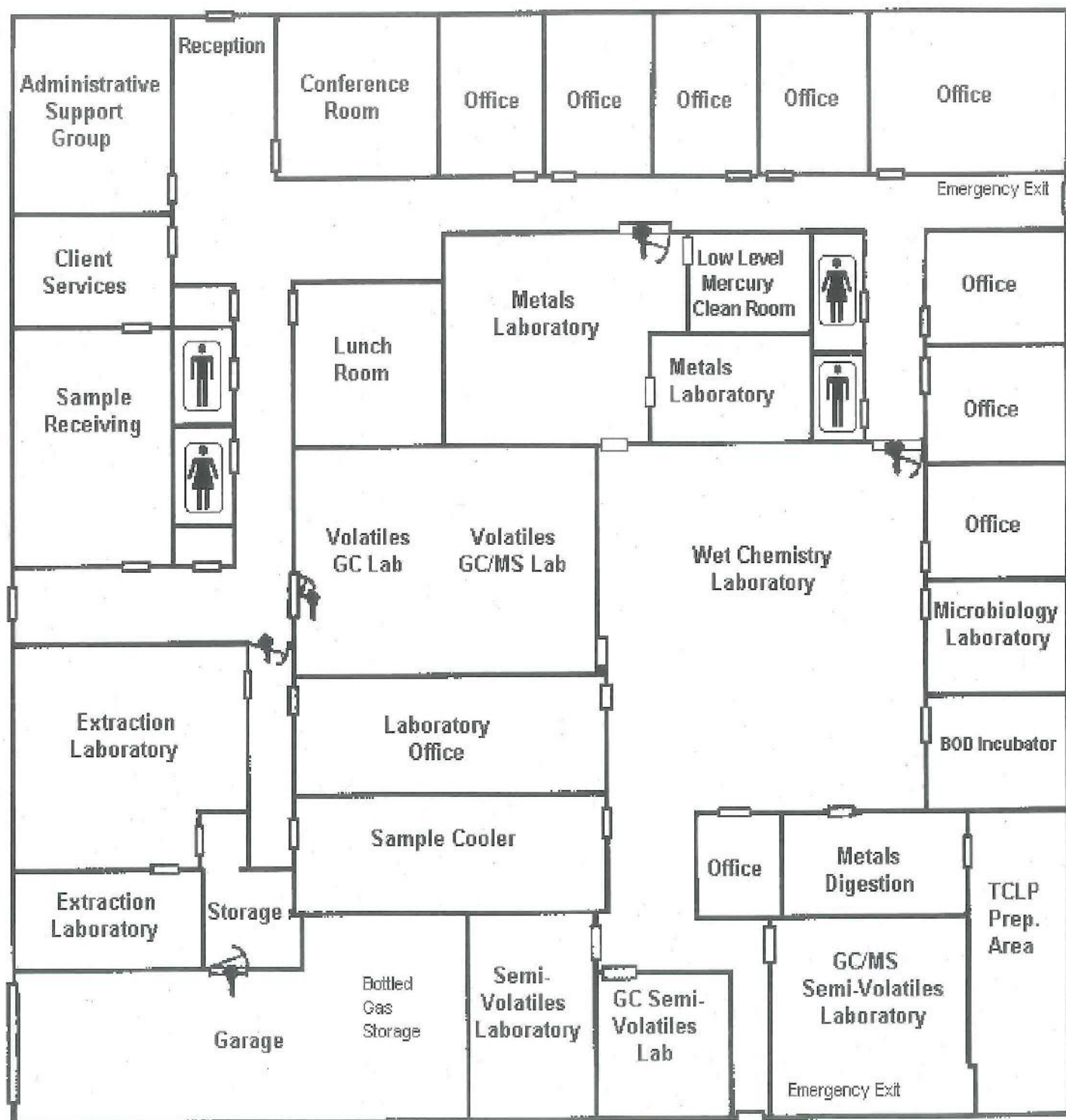
- 16 foot custom designed trailer with high purity gas manifolds, refrigerator, air conditioning, heating and sink.
- Mettler BD 202 Balance
- Two (2) 5000 Watt Honda generators
- Hewlett-Packard-MSD Series II Gas Chromatograph with Electronic Pressure Control upgraded to a 5972 Mass Selective Detector coupled with a Tekmar LSC-2000 Purge and Trap Concentrator and a Dynatech PTA-30 autosampling system

Air Quality Department

- Olympus BH-2 (BHSP) Polarized Light Microscope
- Olympus CH-2 (BHSP) Phased Contrast Microscope
- Four (4) SKC personal air sampling pumps
- DC-Lite DryCal calibrator
- High Volume air sampling pump
- Bacharach electronic gas analyzer for carbon monoxide
- Bacharach electronic gases meter

Appendix V

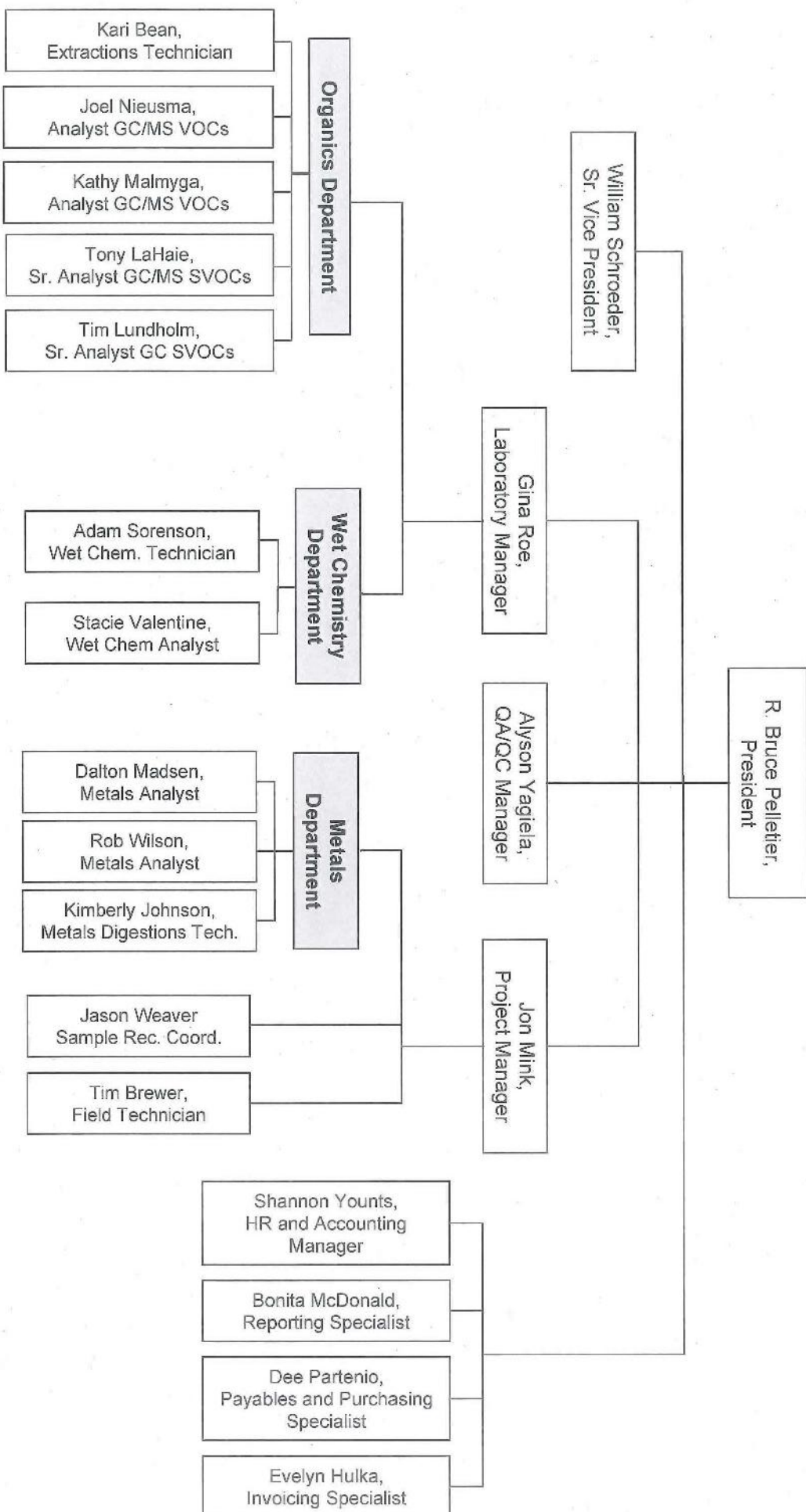
Laboratory Layout



TRACE ANALYTICAL LABORATORIES, INC.

Appendix VI Organization Chart

May 2014



Statement of Qualifications

OVERVIEW



TRACE Analytical Laboratories, Inc. was founded in 1989 by Dr. William Schroeder, a veteran of service in the U.S. Navy that holds a doctorate in chemistry. TRACE is a full service Veteran Owned Small Business environmental laboratory, providing a complete range of environmental analyses and sampling services for our clients. These services include organic and inorganic analyses of water, soil, air, and hazardous waste. All of our routine services conform to strict methodologies from sources such as the US EPA, ASTM, AOAC, NIOSH, and Standard Methods.

TRACE has state-of-the-art analytical instrumentation using proven technology. Part of the Quality Assurance program is obtaining, maintaining, and calibrating equipment and instrumentation that is required to accurately and efficiently carry out analysis of samples as prescribed in analytical test methods. TRACE purchases or prepares appropriate reagents and standards for analyses. Whenever possible these reagents and standards will be ACS grade, spectroquality, or traceable to NIST standards. TRACE collects and receives samples under strict chain-of-custody procedures and adheres to proper sample collection and preservation techniques. The ability to define and defend the analytical process is one of TRACE'S primary Quality Assurance program objectives.

TRACE has substantial experience with servicing the analytical needs of a diverse client base. TRACE is accredited in accordance with the National Environmental Laboratory Accreditation Program (NELAP), the Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), and ISO/IEC 17025:2005. This gives TRACE the ability to provide analytical services to residential, industrial, engineering, and consulting clients, as well as local, state, and federal agencies, including the Department of Defense. TRACE is a Contract Laboratory for the Michigan Department of Natural Resources and Environment, and is Drinking Water Certified by the State of Michigan. Our laboratory continually supports regulatory programs such as CERCLA/SARA, RCRA, Clean Air Act, Safe Drinking Water Act, NPDES and the Clean Water Act.

TRACE's Client Services/Project Management Department works closely with clients and laboratory personnel to ensure all details and project specifications are accurately performed. The Client Services/Project Management Department can assist in project planning, including the preparation of Quality Assurance Project Plans (QAPPs). Working with clients at the onset of a project assures the results are more conclusive and cost-effective.

Personnel:

TRACE Analytical Laboratories, Inc., is comprised of experienced professionals with degrees in chemistry, biology, and environmental science. Our team has specialized training in laboratory operations and experience in the industrial workplace. Their expertise guarantees our clients the range and depth of scientific disciplines, technical specialties, practical experience, and analytical services needed to meet the objectives of today's complex industrial and environmental demands.

Professional resumes for TRACE's key personnel are included in Appendix I.